

Prepare: None

Say: Welcome to the session on Response to Intervention in Elementary and Middle Math. We are hoping that today you learn several new things that can be taken back to your school and your district. Some information today will be a confirmation of what you know and some information will be new learning. We are happy you are here.

Introduce yourself and your background if needed.

Media: None

Handout: None



Describe SLANT: Have participants locate this routine card in their materials

**S** = Sit up (good posture keeps you alert)

**L** = Lean forward (this shows interest to your speaker)

**A** = Ask questions (do this by raising your hand, putting the questions in your notes, and to yourself)

**N** = Nod your head (or else shake your head, or show your understanding or confusion in some other way)

**T** = Track your speaker (keep your eye on the speaker to take in important non-verbal clues and to stay alert and interested)

Give a quick reminder to have cell phones on silent mode

Discuss that conversations should be limited to partner or small group discussions as sidebar conversations can be distracting to those around you.

Go over when the scheduled breaks will be and where the restrooms are located.

No media  
No handouts



Prepare: None

Say:

The IES practice guide for Response to Intervention for Elementary and Middle Math was developed with a focus on the concepts shown on the diagram. There are four recommendations in the guide.

- 1) Screen all students for potential math difficulties and monitor their progress
- 2) Focus interventions on whole and rational numbers, word problems, and fact fluency
- 3) Provide explicit instruction and incorporate visual representations and motivational strategies
- 4) Establish a system-wide framework for RtI to support the three recommended practices

Describe the three tiers of instruction and how they relate to the IES recommendations.

**Tier I:** This tier refers what all students receive for core instruction with scientifically research based materials and practices. If done well, high quality Tier I instruction should result in 80% of the students being proficient or at benchmark.

Use three tan boxes at bottom of chart to support your description

**Tier II:** This tier refers to what students who struggle a little should receive. Research shows that about 10-15% of the students are likely to need a Tier I intervention. This can often be done with practice and repetition in class or for a small pull out time. Recommended time is 20-30 minutes, 4 days per week.

**Tier III:** This tier refers to what students need who are significantly behind grade level. This type of intervention requires an addition 30 minutes, 5 days per week. Students who score in Tier III need about 60 minutes of intervention per day above and beyond the core instruction. The materials and practices used to deliver intervention should be explicit, systematic and accelerated in order to close the gap of grade level performance.

Media: None

Handout: Visual Diagram



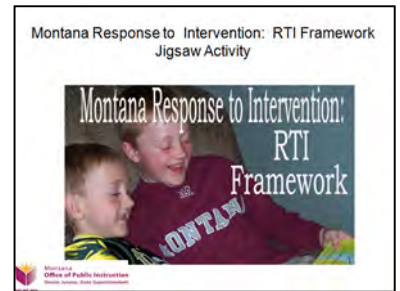
Prepare: Download Multimedia Overview from Doing What Works Website

Say: Now we are going to watch a multi-media overview that gives us a general idea of RtI in Elementary and Middle math. As you listen, jot down key ideas that are shared in the overview.

Do: Show multi-media Overview of entire practice guide

Media: Multimedia Overview: Response to Intervention (4:10 min)

Handout: None



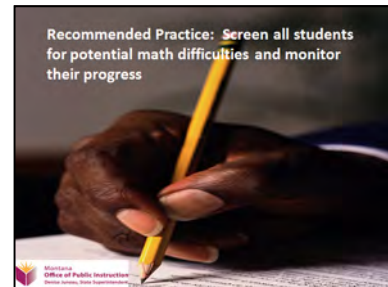
Prepare: Please take out Handout #1, Montana Response to Intervention: RTI Framework

Say: This framework was developed as guidance for implementation of RTI. As we work through this module, you will see alignment between the information from the Doing What Works website and the Montana RTI Framework. Please number off from 1-5. #1's your job is to scan page 6 and be ready to share 2-3 point that align with the information from the multi-media overview. #2's your job is to scan page 7, #3's page 8, #4's page 9 and #5's, page 10. Please be ready to share 2-3 points that align with the multi-media overview.

Do: Participants carry out Jigsaw. Once they are all done scanning, #1's begin

Media: None

Handout #1: Montana Response to Intervention: RTI Framework




Prepare: None

Say: The first recommended practice in the IES Practice Guide is (read slide)

Media: None  
Handout: None

### Key Concepts

- Monitor students regularly
- The RtI team evaluates screening measures using reliability, efficiency, and validity criteria
- Implement twice a year screening



Prepare: None

Say: These are the three key concepts in the first recommendation. We will learn more about these concepts as we continue in the session.

Read the key concepts.

Media: None

Handout: None

Create a T-chart

- Please create a T-chart on your paper
- Label one column effective screening system
- Label the other column functions of progress monitoring
- As you listen to the overview, list the recommended components of an effective screening system

Prepare: Have participants draw a T-chart on their paper. One column label effective screening system and the other column labeled function of progress monitoring.

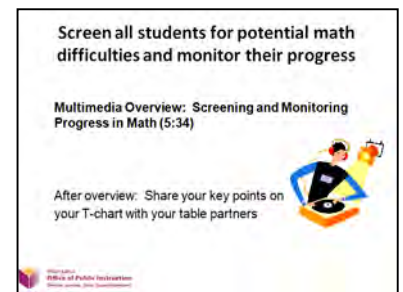
Say: We are going to watch a multi-media overview on the components of screening all students for potential math difficulties. As you watch, please list the recommended components of an effective screening system and the functions of progress monitoring. We will be sharing the list of components after the overview with our table partners.

We will use the functions of progress monitoring portion of the T-chart a little later in the session.

Media: None

Handout: None





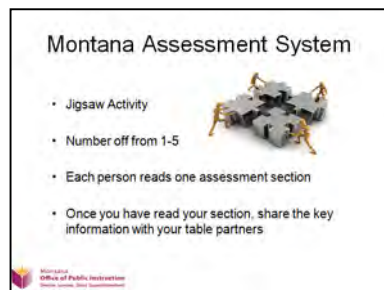
Prepare: Download media from Doing What Works Website

Do: Show Screening and Monitoring Overview

Say: Now that we have watched the overview, with your table partners, please share the information you recorded on your t-chart. After 10 minutes, we will ask each table to share one key point.

Media: Multimedia Overview: Screening and Monitoring Progress in Math (5:34)

Handout: None



Prepare: Be sure that each participant has Handout #2

Ask participants to turn to Handout #2.

Say: This document comes from the Montana Office of Public Instruction and was developed to give a snapshot of the assessment system recommended for Response to Intervention implementation in Montana.

Please number off from 1-5. Number 1's, you read intro and the section on screening, #2's, you read the section on progress monitoring, etc.

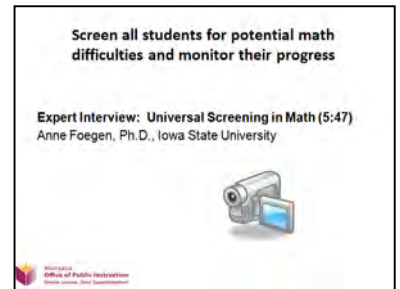
When you are done reading your section, it is your job to share the key information from your section with your table partners. #1's will begin sharing first.

When jigsaw sharing is finished:

Say: Now that we have discussed the assessment system, we will look more closely at screening and progress monitoring in math from the recommendations in the practice guide.

Media: None

Handout #2: Montana Comprehensive Assessment System-MT RtI Resource



Prepare: None

Say: Dr. Anne Foegen shares important considerations for universal screening in math. As you watch the video, jot down notes on the important things to look for and think about when selecting and implementing a screening tool.

Do: Show Expert video

Media: Expert Interview: Universal Screening in Math (5:47 min.)

Handout: None

- Examine Resource list from Montana OPI Title I conference
  1. What do you notice about the information provided?
  2. How would this help you in your initial stages of selecting a screening tool?
- Chart your team responses on a chart paper

Prepare: None

Be sure the chart paper and a marker are close to tables.

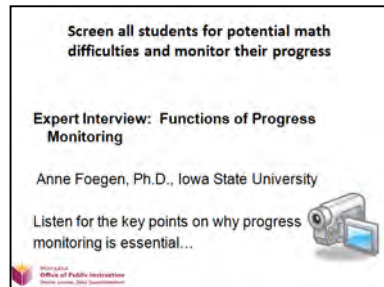
Ask participants to turn to Handout #3.

Say: This resource list was developed from the Montana OPI Title I conference. The resource list includes Rtl assessment options, instructional resources as well as websites that could support the implementation of Rtl in math. Please look at it carefully and generate answers to the questions on the slide. As you discuss the questions, please record your answers on the chart paper at your table.

Do: Once the participants have discussed and recorded their answers, ask each table to share one response from chart paper

Media: None

Handout #3: Selected References RTI Math Elementary Title I Conference Resource List



Prepare: None

Say: Now we are going to watch another Expert Interview from Anne Foegen from Iowa State University. In this video she is going to share key points on why progress monitoring is essential and the functions of progress monitoring.

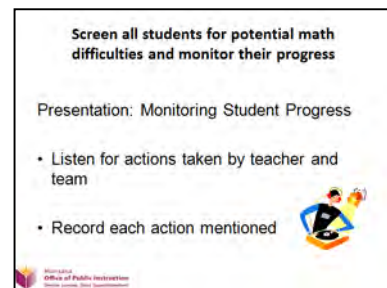
As you listen, please use your T-chart from a few minutes ago to take notes on key points of the functions of progress monitoring.

Do: Show expert video

After video, Think about the key point of the functions of progress monitoring. Now, Pair/Share your key points of the functions of progress monitoring with your partner.

Media: Expert Interview: Functions of Progress Monitoring (4:34 min.)

Handout: None



Prepare: None

Say: Now that we have heard from an expert on the functions of progress monitoring, we will listen to a teacher share the actions she takes in monitoring the progress of her students in math.

Please take notes on the actions she takes and be prepared to talk about them with your Think Pair Share partner.

**Trainers: Review actions if needed. Listen for the following information. Add to the discussion afterward if needed.**

### **Teaching:**

Whole group instruction first, check for understanding, reteach if needed, use manipulatives

### **Progress Monitoring:**

One minute probe,

One on one,

Document on graph,

Set goal for end of year,

Check to see if student is meeting intended growth,

4 pt rule, (4 weeks of progress monitoring data points)

Not making progress for 4 weeks, change intervention,

Constantly evaluate skills of kids and instruction,

Adjust instruction and documentation

Media: Monitoring Student Progress (3:40 min.)

Handout: None

- Examine: Self assessment tool for data utilization with screening and progress monitoring tools



Prepare: Ask participants to turn to Handout #4

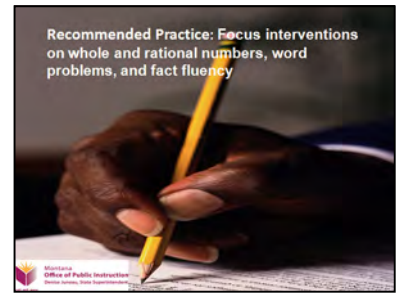
Say:

Let's take a look at the Self Assessment tool from the Doing What Works website on screening and progress monitoring. Spend a couple of minutes completing the self assessment individually.

Select one item that you would like to work on and share that with your Think Pair Share partner. We will work with our partners for about 5 minutes.

Media: None

Handout #4: Professional Development for Data Utilization: Self Assessment Tool



Prepare: None

Say: The second recommended practice in the IES Practice Guide is (read slide)

Media: None  
Handout: None



### Key Concepts

- Focus kindergarten through fifth-grade interventions on whole numbers
- Focus fourth- through eighth-grade interventions on rational numbers
- Ensure in-depth coverage of math topics
- Interventions on solving word problems should include instruction that helps students identify common underlying structures
- Interventions at all grade levels should devote about ten minutes each session to building fluent retrieval of basic arithmetic facts

Prepare: None

Say: This recommendation in the IES Practice Guide for Response to Intervention in Elementary and Middle Math focuses on these five key concepts. The practice guide provides support on what math content should be taught during math interventions .

Media: None

Handout: None

- Multimedia Overview: The Content of Math Interventions (5:47 min)



Prepare: Download video from Doing What Works

Say: The multi-media overview gives us perspective on what math content should be taught during math intervention and what strategies are critical when delivering instruction for struggling students.

As you watch the overview, takes notes on the essential content that should be taught. You will be sharing your notes with your Think/Pair/Share partner.

Show Video: 5:47 min

After the Video: Share one or two key points from your notes with your Think/Pair/Share partner.

Media: Multimedia Overview: The Content of Math Interventions (5:47 min.)

Handout: None

### Tier II and Tier III content

Elementary: In depth treatment on a limited  
# of topics-K-4

1. Whole number
2. Strategic counting
3. Number composition
4. Understanding place value
5. Solving problems with whole numbers
6. Underlying meaning of addition and subtraction operations



Prepare: None

Say: As we heard in the overview, in Elementary, Tier II and Tier III content should be specific and focused on:

In depth treatment on a limited # of topics-K-4

1. Whole number
2. Strategic counting
3. Number composition
4. Understanding place value
5. Solving problems with whole numbers
6. Underlying meaning of addition and subtraction operations

Media: None

Handout: None

### Tier II and Tier III content

#### Middle School

1. Rational numbers and Operations with fractions, ratios, decimals and percents
2. More complex whole numbers, multiplication and division



Prepare: None

Say: In Middle School, Tier II and Tier III content moves to more complex concepts and operations.

#### Middle School

- Rational numbers and Operations with fractions, ratios, decimals and percents
- More complex operations with whole numbers, multiplication and division

Media: None

Handout: None

Jigsaw OPI document

- Number off 1-5
- Read your section
- Share the key points from your section with your table partners



Prepare: Ask participants to turn to Handout # 5.

Say: We are going to examine a synthesis of empirical research on teaching mathematics to low achieving students. This synthesis was produced by the Center on Instruction and was written by Baker, S., Gersten, R., & Lee, D. (2002).

Please number off from 1-5.

#1's, you will read the introduction.

#2's you will read the first section on the top left.

#3's you will read the section on the top right.

#4's, you will read the section on the bottom left and

#5's, you will read the section on the bottom right. When you have finished reading, please share the critical points with your partners.

Media: None

Handout #5: A Synopsis of a Synthesis of Empirical Research on Teaching Mathematics to Low-Achieving Students (Center on Instruction)



Prepare: Download Video from Doing What Works Website

Say: Now that we have heard the overview on recommended content for Tier II and Tier III interventions and studied some of the empirical evidence, let go deeper into what it looks like to deliver that content during interventions.

Please listen to the expert interview from Sybilla Beckmann from the University of Georgia.

As you watch the video, listen for the foundations of arithmetic that she mentions as key content for intervention for struggling students in grades K-5 and 6-8.

Media: Expert Interview: Math Content for Struggling Students (5:49 min.)

Handout: None

## Foundations of Arithmetic

- K-5 recommends focus on numbers and operations
  - Used to tell us how many things
  - Place value, decimal system
  - Operations (addition, subtraction, multiplication, division)
  - How they work, why they work



Prepare: None

Say: Dr. Beckmann spoke to the content and underlying concepts that struggling students need to master.

Review the content and concepts from slide:

Background knowledge that can be included in the review:

**Whole Numbers**

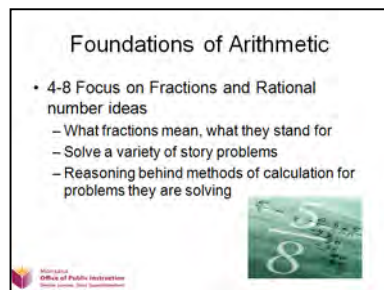
A focus on whole numbers means, first of all, that especially for the very youngest students, they need to understand that numbers can be used to tell us how many things are in a collection. Gradually, as they begin to get a little bit older, they need to understand the importance of place value in the decimal system, by which we bundle or we think of numbers as bundled in groups of 10, and successive bundling in groups of 10.

To help students understand place value and the decimal system, simple objects such as toothpicks or any other small object that you can bundle and put together can be helpful. So for example, here are toothpicks, and to represent the number 234, we can show four ones, so four single toothpicks and then three bundles of 10, so each one of these bundles could be broken up or unbundled to make 10 individual ones, and it shows that this number three, this digit three, stands for three bundles of 10, and then the digit two that stands for 200 is represented with two bigger bundles; each of these bundles consists of 10 bundles of 10. So here we're starting to see the structure of the decimal system is repeated bundling in tens. So that would be the first component in understanding whole numbers.

Also important, of course, then, are operations on whole numbers: addition and subtraction for the younger children, and then as they get older into the upper grades towards third, fourth, and fifth grade, multiplication and division as well. As part of understanding the operations, students need to understand how the various operations work, why they work, especially what the operations mean. So when we're adding and subtracting, what does that mean and what kinds of problems does it solve? To understand the algorithms for addition and subtraction and the algorithms for multiplication and division, those involve extremely important reasoning.

Media: None

Handout: None



Prepare: None

Say: Review content of slide

Background information if needed for the review of content of slide:

### ***Rational Numbers***

For students in grades 4 through 8 who are struggling with mathematics, the IES Practice Guide on Response to Intervention in Mathematics recommends that these students focus on rational number ideas. *Rational numbers means, basically, the fractions and the decimals in addition to the whole numbers. First of all, those students should understand what fractions mean, what they stand for.*

Part of a focus on rational numbers is to be able to solve a variety of story problems using a variety of contexts and different situations using those numbers, using fractions, finite decimals, and percents. For students in Tiers 2 and 3 who are struggling with mathematics, it is very important that they understand the reasoning behind the methods of calculation that they're learning. The reasoning and the ideas that are embedded in those calculation methods is essential and is used in more advanced mathematics. So by learning those ideas, by learning those lines of reasoning, students are actually preparing to learn other ideas in algebra, for example, or in geometry also, that are similar and that use a similar type of reasoning.

Media: None

Handout: None



Prepare: None

Media: None  
Handout: None

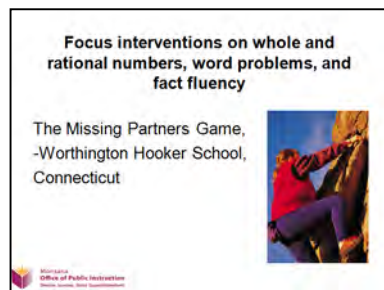
Compare recommendations to Montana State Standards			
Math Performance Standards (Grade Level Expectations) Grades K-3			
Understanding: Meaning of Operations	Grade 1	Grade 2	Grade 3
<p>The student demonstrates conceptual understanding of mathematical operations by:</p> <ul style="list-style-type: none"> <li>(K) Using grouping (<math>+</math>), <math>(-)</math>, and <math>(\times)</math> signs (OE.1.3)</li> <li>(K) Adding, subtracting, or finding the product of whole numbers (OE.1.3)</li> <li>(K) Adding, subtracting, or finding the product of whole numbers (OE.1.3)</li> <li>(K) Adding, subtracting, or finding the product of whole numbers (OE.1.3)</li> </ul>	<p>The student demonstrates conceptual understanding of mathematical operations by:</p> <ul style="list-style-type: none"> <li>(1) Adding, subtracting, or finding the product of whole numbers (OE.1.3)</li> <li>(1) Adding, subtracting, or finding the product of whole numbers (OE.1.3)</li> <li>(1) Adding, subtracting, or finding the product of whole numbers (OE.1.3)</li> </ul>	<p>The student demonstrates conceptual understanding of mathematical operations by:</p> <ul style="list-style-type: none"> <li>(2) Adding, subtracting, or finding the product of whole numbers (OE.2.3)</li> <li>(2) Adding, subtracting, or finding the product of whole numbers (OE.2.3)</li> <li>(2) Adding, subtracting, or finding the product of whole numbers (OE.2.3)</li> </ul>	<p>The student demonstrates conceptual understanding of mathematical operations by:</p> <ul style="list-style-type: none"> <li>(3) Adding, subtracting, or finding the product of whole numbers (OE.3.3)</li> <li>(3) Adding, subtracting, or finding the product of whole numbers (OE.3.3)</li> <li>(3) Adding, subtracting, or finding the product of whole numbers (OE.3.3)</li> </ul>

Prepare: None

Say: This slide shows us the Montana state standards focused on operations for young students.

Media: None

Handout: None



Prepare: Doing What Works Handout: Missing Partners Game (Handout #6)

Say: This activity is a sample of how students in Kindergarten build number sense. The handout sheets show the results of a mathematics instructional game played by kindergarten students to practice an aspect of number sense, composition of whole numbers.

Pairs of students work together on the game, each completing a documentation sheet. Please take a moment and look over the directions for the Missing Partners Game.

Do: Partner with your Think/Pair/Share partner.

Number 1's and 2's.

Number 1's, it is your turn first to select a number between 1 and 10 and write it at the top of your mountain. Draw a given number of tumblers on the left side of the mountain.

#2's your turn to draw the remaining number of tumblers to fall on the right side of the mountain to equal the total number of climbers written at the top of the mountain.

Media: None

Handout #6: Doing What Works Missing Partners Game

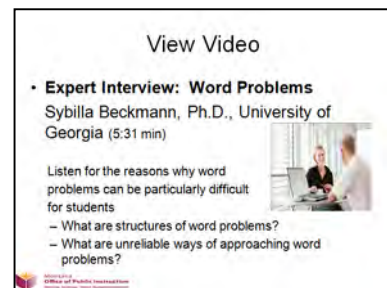
[illegible]

Prepare: None

Say: As we look at standards for grade 5, we see the complexity of understanding number and operations that are in line with the interventions mentioned for students in the overview as well as the expert interview.

Media: None

Handout: None



Prepare: Download Expert Interview from Doing What Works

Say: We are going to watch an expert interview that discusses why word problems can be particularly difficult for students. Please take notes on the two questions on the screen as we will be sharing with our partner after the video.

Do: Show Video

After video:

Please Think, on your own for a minute, now Pair Share with your partner the information your recorded on the two questions.

What are structures of word problems?

What are unreliable ways of approaching word problems?

Trainers: Please listen for these concepts and review if necessary

1. Difficult to decide which operation to use, where and with what part of the problem
2. Explicit instruction on what type of problem is solved by what operation
3. Teacher needs to discuss how I can tell that this problem is solved by the particular operation
4. Key words simply can't be a reliable way to solve problems every time
5. Structure of problem holds appropriate key for understanding what operation should be used

Media: Expert Interview: Word Problems (5:31 min.)

Handout: None

#### Prior to Hearing Audio

- Use Four Square graphic organizer...
- Was the intervention content mostly focused on the recommended math topics?
- Are intervention materials focused on the recommended topics? Are materials adequate for students who require many examples and much practice?
- How are students in Tier 2 and Tier 3 being taught to solve word problems?
- How much emphasis do interventionists place on developing fact fluency, and to what extent do they employ strategic approaches?

Prepare: Please take out Handout # 7. (Observing a small group intervention lesson)

Say: We will use this graphic organizer while we listen to the next audio. When we are finished with the audio, we will participate in an inside/outside circle activity.

In order to be prepared for that activity, please complete this graphic organizer as you listen.


Record as much information as you can in each box as you will use that for your foundation of sharing in the inside/outside circle activity.

Media: None

Handout #7: Observing a Small Group Intervention Lesson

**Focus interventions on whole and rational numbers, word problems, and fact fluency**

- Listen to Audio: Reteaching Place Value Media (5:42min)
- Reteaching Place Value: Focus of instruction for intervention groups



Montana Office of Public Instruction  
Denise Juneau, State Superintendent

Prepare: Download audio from Doing What Works Website

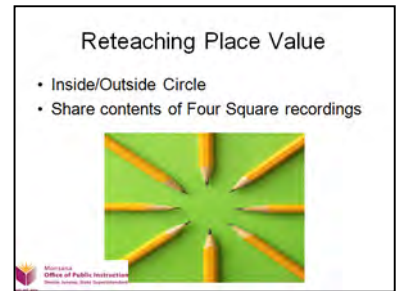
Say: We will listen to an audio of a teacher working with students in a small intervention group. She discusses the lesson focused on Reteaching Place Value. As she shares, please remember to take notes that you can share with your table partners.

Do: Play audio

Say after the audio: Please number off at your table 1-4. Ones begin, and please share one key point that you recorded while listening to the audio. If you have more to share after you have taken turns, 1-4, you may begin again.

Media: Reteaching Place Value Audio (5:42min)

Handout: None



Prepare: Make sure there is a space large enough for participant to create an inside/outside circle.

Say: Now that we have listened to the audio, it is time to move to our inside/outside circle. Please bring your Four Square graphic organizer with you. Number 1's and 2's. Number ones form a circle facing out. Number 2's create a circle facing in towards a partner.

Number 1's, you will share first and after 2 minutes, we will switch and number 2's will share. If you are a listener, please carefully attend to what your partner is saying. When you are sharing, please focus on the content on your graphic organizer.

We will begin by sharing the information in box 1 of the graphic organizer. When I raise my hand, please close your conversation and give me your attention.

**Trainers:** When each partner has shared the content of box 1, raise your hand and gather their attention. Ask number 1's to take one step left to a new partner.

Say: Please introduce yourself to your new partner. We will now be sharing box number 2. 2's will begin this time.

**Trainers...**continue this process until you have shared the information in all 4 boxes.

Media: None

Handout: Observing a small group intervention lesson





Prepare: None

Say: We have spent some time learning about the content of math interventions for struggling students. Please tell your partner two or three things that were confirmed or new learning for you today.

Think about the new or confirmed learning from today. Pair/Share those new or confirmed learnings with your partner.

Media: None

Handout: None



Prepare: None

Say: The third recommended practice in the IES Practice Guide is (read slide)

Media: None  
Handout: None

### Key Concepts



- Tier 2 and Tier 3 math instruction should provide clear explanations with thinkalouds.
- Explicit teaching includes guided practice with scaffolding of the required problem-solving steps.
- Guided practice should include immediate corrective feedback.
- Use visual representations to explain math concepts.
- Praise student effort and engagement.

Prepare: None



Say: Please read the key concepts to yourself.

Media: None

Handout: None

Provide explicit instruction and incorporate visual representations and motivational strategies

- Multi-media Overview: The Instructional Process in Intervention (6:31)
- Number off from 1-4
  - #1's & 3's-List the characteristics of explicit instruction
  - #2's & 4's -List the key features of using concrete examples



Prepare: Place one bag of M & M's on each table. Each participants selects a color of m & m and places them in front of them. Remind them not to eat the candy as they will need it in a few minutes.

Say: We are going to listen to a multimedia overview and it contains lots of information and guidance on providing explicit instruction and incorporating visual representations for struggling students. In order to capture the information, you are each going to be responsible for a chunk of information.

Please number off from 1-4.

As you can see on the slide, #1 & 3's are going to take notes on the characteristics of explicit instruction. #2's and 4's will take notes on the key features of using concrete examples.

When we are finished with the audio, we will use the m & m's for a processing activity to share the information from our notes. Please record as much as possible with your respective content.

Media: Multi-media Overview: The Instructional Process in Intervention (6:31)

Handout: None

## M &amp; M activity



- Each team member selects an m & m color.
- Beginning with #1 :
  - Share one key feature from explicit instruction
  - Then #3 shares, then back to #1
  - Continue until M & M's are gone or ideas are all shared
- Then proceed with #2's and #4's in same pattern (sharing info on using concrete examples)

Prepare: M & M's at each table with 3-4 of each color

Say: It is now time to share our notes from the audio. You will work in teams of 4. 1's and 3's will share first on their recorded information on explicit instruction. When you have shared an idea, place an m & m in front of you. While they are sharing, 2's and 4's your job is to listen. Once 1's and 3's are done with their content (either your color of m & m is gone, or you have no more ideas) , 2's and 4's begin to share their notes on using concrete examples.

Read slide for directions on how to conduct the activity.

Trainers: When you see that candy is gone or sharing has come to a close, conclude the activity and thank them for doing a great job.

Media: None

Handout: None

- **Expert Interview: Explicit Instruction**  
Bradley Witzel, Ph.D., Winthrop University  
(4:55 Min)



Prepare: Download Expert Interview from Doing What Works Website

Say: Now we are going to listen to Dr. Witzel from Winthrop University share more details on delivering explicit instruction in mathematics.

Dr. Witzel describes the components of explicit instruction, including modeling and demonstration, guiding and scaffolding practice, providing independent practice, and providing meaningful feedback.

He clarifies how scaffolding differs within and across lessons and discusses the importance of motivation.


As you watch the video, please take notes on two or three important points that you want to remember.

Media: Expert Interview: Explicit Instruction, Bradley Witzel (4:55 min.)

Handout: None

Provide *explicit instruction* and incorporate visual representations and motivational strategies

- Listen to Audio: Explicit Teaching in the Fifth-Grade Math Core (4:06)
  - List the steps she describes for delivering explicit instruction
  - Think-Pair-Share the steps with your partner



Prepare: Download Audio from Doing What Works Website

Say: In our next audio, we will hear from a fifth grade teacher discuss a step by step approach with delivering explicit instruction.

As you listen, please take notes on the steps she describes and we will share those notes with your partner once we have concluded to audio.


Think about which of the steps that you could work on to incorporate into your teaching. Now, Pair/Share those steps with your partner.

Media: Explicit Teaching in the Fifth-Grade Math Core (4:06)

Handout: None

Provide *explicit instruction* and incorporate visual representations and motivational strategies

- Explicit teaching steps
  - Explicit vocabulary instruction
  - TAPPLE
  - Scaffold problem solving
  - Student engagement (partner share)
  - Check for understanding
  - Regrouping students (goal setting)
  - Teacher collaboration
  - Ongoing teacher training

A small photograph showing a teacher in a pink shirt leaning over a desk, interacting with two young students who are looking at a book or paper.

Prepare: None

Say: Here are the steps mentioned in the audio regarding steps for explicit instruction. Review steps after Think Pair Share

Trainers: TAPPLE: Teach, Ask question, Pause, Pick a volunteer

Media: None


Handout: None



Provide explicit instruction and *Incorporate visual representations* and motivational strategies

Concrete-Representational-Abstract (CRA) Instructional Approach Summary Report

- Scan page 1 from the Summary report
- Listen for the details of Concrete-Representational-Abstract approach
- Record key information from the video



Prepare: Please turn to Handout #8. Concrete-Representational-Abstract (CRA) Instructional Approach Summary Report

Say: Please take a minute to scan this document. This is a summary report that discusses details of the Concrete-Representational-Abstract approach. This approach supports designing instruction that moves from concrete to abstract instruction in order to support and scaffold student learning.

We are going to listen to an expert interview with Dr. Witzel and as we watch, please listen for details of this approach. Please takes notes as you listen.

Media: None

Handout #8: Concrete-Representational-Abstract (CRA) Instructional Approach Summary Report

- **Expert Interview: Visual Representations**

Bradley Witzel, Ph.D., Winthrop University  
(4:04 min)



Prepare: Download Video from Doing What Works website

Say: Now we will see another video from Dr. Witzel. Please listen for what he shares regarding Concrete, Representational and Abstract visual representations.

Do: Show video


Media: Expert Interview: Visual Representations (4:04min.)

Handout: None



Provide explicit instruction and *incorporate visual representations* and motivational strategies

- *Concrete: The "doing" stage using concrete objects to model problems*
- *Representational: The "seeing" stage using representations of the objects to model problems*
- *Abstract: The "symbolic" stage using abstract symbols to model problems*



Prepare: None


Say: As we saw in the video, the three concepts in incorporating visual representation are Concrete, Representational and Abstract.

Media: None

Handout: None

Provide explicit instruction and *Incorporate visual representations* and motivational strategies

- Listen to Audio: Concrete to Abstract (6:42 min)
- Concrete to Abstract Sequence
  - How did she structure the lesson?
  - How did she move from concrete to abstract during the lesson?



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Prepare: Download Audio from Doing What Works website

Prepare: Please take out Handout # 9. Concrete to Abstract Lesson

Say: Now that we have an idea of the content of this approach, we are going to listen to an audio of a teacher discussing the designs of her lessons incorporating the CRA approach.

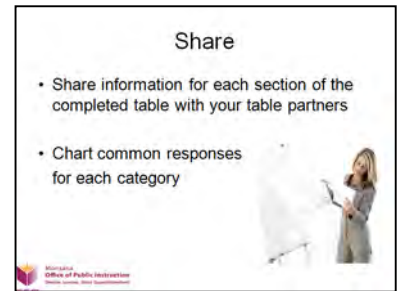
As you listen, please take notes in the appropriate box for each of the steps of the Concrete-Representational-Abstract approach discussed by the teacher. We will share these notes with your table partners after the audio.

Say: Now we will listen to a teacher share information about moving from Concrete to Abstract visual representation.

Do: Play audio

Media: Listen to Audio: Concrete to Abstract, Middle School teacher (6:42 min)

Handouts #9: Doing What Works Concrete to Abstract Lesson



Prepare: Be sure there is chart paper and a marker at each table

Say: Please share your notes from Handout #9 with your table partners. As you share, please record common responses and important information on the chart paper. Please be prepared to share one key point from your chart when we are finished.

Trainers: When it looks like most teams are done sharing, ask tables to share one key idea from their chart that they thought was particularly important.

Media: None

Handout: No new handout



Provide explicit instruction and incorporate visual representations and motivational strategies

Planning for Visual Representations

Planning for Visual Representations

This planning document is designed to help educators provide Tier 2 and Tier 3 mathematics instruction that incorporates visual representations as part of the concrete-representational-abstract (CRA) sequence. The completed planning worksheet serves as a detailed lesson plan to guide implementation and a record for future use.

Planner	
Lesson objective	18.2. add fractions with unlike denominators
Systematic analysis of problem-solving steps and formative assessment	18.2. ensure that the denominators are the same, "multiply denominator" and numerator by same number as necessary, add the numerators, simplify the fraction
Choice of concrete materials for demonstration of steps	18.2. fraction strips or circles
Options for representation for demonstration of steps, including sketch	18.2. area diagram

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Prepare: Please take out Handout # 10. Planning for Visual Representation

Say: Please take a look at this planning tool for designing instruction that support Visual Representation. As you look through the planning tool Discuss the ways this tool could be used in your classroom and school. Select one area that you currently do well and one area that you could work on to improve with your math instruction.

Do: Discuss the one are that you are currently implementing well and the one area that you could work on with your table partners.

Media: None

Handout #10: Planning for Visual Representation



Prepare: None

Say: The fourth recommended practice in the IES Practice Guide is (read slide)

Media: None  
Handout: None



### Key Concepts



- Build a comprehensive framework that addresses reading and mathematics.
- Establish core mathematics instructional programs focused on foundational skills.
- Create leadership teams in districts and schools to facilitate implementation of RtI components.
- Provide professional development and instructional supports to sustain high-quality implementation.

Prepare: None

Say: Read key concepts for the recommendation

Media: None

Handout: None





Prepare: Download Expert video from Doing What Works Website

Say: Now we will watch an expert video from Iowa Heartland Area Education Agency. While you watch the video, please take notes on the lessons learned and the accommodations made to RtI by the Heartland Agency. They have been pioneers in the implementation of RtI and have shared what they have learned.

Once we are finished with the video, we will share our notes with out Think/Pair/Share partners

Do: Show Expert Video

Media: Expert Interview: The Phases of RtI Implementation

Handout: None

Establish a system-wide framework for RtI to support the three recommended practices

- Think-Pair-Share
  - Three lessons learned
  - Recommendations made by Dr. Tilly



Prepare: None


Say: Think about the three lessons or recommendations you learned during the video. Now Pair/Share with your partner three lessons learned and recommendations that were relevant to you and your work.

Media: None

Handout: None

Establish a system-wide framework for RtI to support the three recommended practices.

- Phased Implementation
- Building Infrastructure
- Considers needs of schools and their implementation

A photograph of two people, likely educators, standing and looking at a document or screen. One person is pointing at the document, and the other is looking on attentively.

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Prepare: None

Say: In review, these three concepts are important in establishing a system-wide framework for RtI. Whether implementing in a school or a district, it is important to keep these recommendations in mind.

Media: None

Handout: None



Prepare: Download Video from Doing What Works website

Say: We are going to watch a video with a principal sharing her experience in a school that is implementing Response to Intervention.

She shares a couple of pitfalls as well as recommendations when establishing a system-wide framework for implementation.

Please listen for her thoughts on the two questions on the slide.

Take notes and we will review the pitfalls and recommendations after the video.

Media: Charting the Path (4:38 min.)

Handout: None



Establish a system-wide framework for RtI to support the three recommended practices

- Recommendations for avoiding pitfalls
  - Be careful of too many teams operating in the school
  - New leaders need to be thoughtful of what is in place
  - Roles and responsibilities need to be clear
  - Coordination with special education and general education



Prepare: None

Say: These are the recommendations that were shared in the video. As we implement RtI, these recommendations are likely to help us in avoiding pitfalls that many leaders have already experienced. Read recommendations shared from video as a review.

Media: None

Handout: None

Establish a system-wide framework for RtI to support the three recommended practices

- View video: **Principal's Role in Instructional Decision Making** (5:48)
- Listen carefully to the principal's actions that she takes regularly to be sure she is leading the process effectively
- List those actions as you listen



Prepare: Download Video from Doing What Works Website

Say: Now we will watch a video from another principal and her role in leading the instructional decision making process.

As you listen, please take notes on the actions she takes to lead the process effectively. We will share those actions with table partners after the video.

Show Video

Media: Principal's Role in Instructional Decision Making (5:45 min.)

Handout: None

Establish a system-wide framework for RtI to support the three recommended practices

- Chart key actions and steps taken by principal to ensure high quality implementation of Response to Intervention
- Select one key action that is also happening in your school or you would like to see beginning to happen

A graphic of a target with concentric circles in blue, red, and yellow, symbolizing focus or goals.

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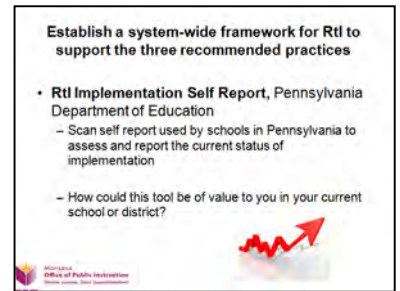
Prepare: Place chart paper and a marker at each table

Say: Share the actions taken by the principal and chart them on your paper at your table. Once you have charted all actions, select one key action that is happening at your school or one key action that you would like to see beginning to happen at your school.

Share out the key actions selected by each table.

Media: None

Handout: None



Prepare: Please take out Handout #11. Rtl Implementation Self Report, Pennsylvania Department of Education

Place a piece of chart paper and marker at each table

Say: This self assessment can be used by school to determine the current status of implementation of Rtl. Please scan the tool and discuss how this tool could be useful in your school. Record the ideas on chart paper at your table.

After tables have charted their ideas, call on tables to share out.

Media: None

Handout #11: Rtl Implementation Self Report, Pennsylvania Department of Education





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### Thank you

- We appreciate your participation and hope you have found this module to be valuable.



## References/Resources

- Doing What Works: <http://dwww.ed.gov/>
- National Mathematics Advisory Panel Final Report: <http://www2.ed.gov/about/bdscomm/list/mathpanel/report/final-report.pdf>
- MT RTI website: <http://opi.mt.gov/Respurces/RTI/Index.html>
- Montana Office of Public Instruction Content Standards: <http://www.opi.mt.gov/Curriculum/Index.html>

Prepare: None

Say:

Much of the media and handouts for this training we made available from the website ***Doing What Works***

The Doing What Works website is a website dedicated to helping educators implement effective educational practices and includes practice guides developed by the U.S. Department of Education's Institute of Education Sciences.

No media

No handouts